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THE FORTHCOMING PHARMACOPŒIA.

By Joseph P. Remington.

While it is too soon to review in advance the Eighth Decennial Revision of the United States Pharmacopœia, in detail, the interest in this edition has been so widespread, and the inquiries about the changes have increased to such an extent, that it seems only right to give to the pharmaceutical profession information about the most salient features. The work is now being printed and, if no unforeseen accident occurs, it will be ready in October. For the first time in the history of Pharmacopœial revision in the United States the work is being revised under the control of a chartered organization. As is well known, previous revisions were conducted by a body known as the Committee of Revision, which had entire charge of the work, including the sale of the book and the control of the finances. Owing to the immense increase in what are known as new remedies within the last ten years, and the greatly enlarged scope of the work of revision, it was deemed best in 1900 to relieve the distinguished Chairman, Dr. Charles Rice, of part of his burden by separating the financial and commercial duties from the work of revision, and to place under his leadership the important duty of preparing the manuscript and the other work in charge of a Board of Trustees. To accomplish this, a charter for the United States Pharmacopœial Convention was granted on the 7th day of July, 1900, in Washington, by the District of Columbia. By this charter, the objects above outlined were secured, and thus the whole work of revision has been given a legal and official status, which remedied a fundamental need demonstrated by previous revisions.

Interest in the forthcoming revision has been enhanced by the Food and Drug Laws of the various States, and the legislation in Congress which claimed the attention of the country at the recent session. One of the serious criticisms of the Pharmacopœias of 1880 and 1890 was that in many cases the requirements, notably in the chemical products, were entirely too stringent; absolute purity in medicinal chemicals is unnecessary, and the standards were found to be in some instances impossible of fulfilment, unless the cost of the product was increased to such an extent as to make it an uncommercial article.

On the other hand, the presence of impurities which would interfere with therapeutical action was to be carefully guarded against. The Convention of 1900 adopted the following general principles:

"The Committee is instructed to revise as carefully as possible the limits of purity and strength of the pharmacopœial chemicals and preparations for which limiting tests are given. While no concession should be made towards a diminution of medicinal value, allowance should be made for unavoidable, innocuous impurities or variations due to the particular source or mode of preparation, or to the keeping qualities of the several articles."

To carry out this direction, the Committee of Revision has adopted what has come to be known as the "Purity Rubric." This will be one of the features of the new book, and will be placed immediately under the official title and English name of the article. It will declare the percentage of the pure substance and the limit of innocuous impurity permitted, but will not prevent the sale of the absolutely pure article, or that of a higher grade, if any pharmacist chooses to use such. But it must be understood that the so-called "impurities" are innocuous, and this is controlled by chemical limitation tests, which exclude likely impurities of a harmful character.

The introduction of methods of assay for a number of drugs, the quality of which can be controlled in this way, will mark another advance by the forthcoming Pharmacopœia, the number of assay processes having been largely increased.

Another new feature will be the introduction of doses. This subject occupied the attention of previous Conventions for a number of years. The introduction of doses was opposed mainly by the physicians of previous Conventions, chiefly for the reasons that it was

impossible to fix upon single quantities as doses, because of the idiosyncrasies of patients, and the danger of prosecution and liability to needless annoyances in prescribing through the limitations thus placed in a work of authority like the Pharmacopœia. If maximum doses were inserted, the physician who ordered a dose in excess of the quantity would be called up by the dispenser, or he would be required in every case to indicate by underscoring, or some similar method, that a dose above that directed by the Pharmacopœia was intended. On the other hand, pharmacists greatly desired the maximum dose inserted, in order to relieve them of the responsibility of determining whether a dose was excessive or dangerous. But in the Convention, the views of the pharmacists prevailed, but it was necessary to avoid maximum or minimum doses, and insert an average dose, as will be seen by the following instruction to the Committee of Revision:

"After each pharmacopœial article (drug, chemical, or preparation) which is used or likely to be used internally or hypodermically, the committee is instructed to state the average approximate (but neither a minimum nor a maximum) dose for adults, and, where deemed advisable, also for children. The metric system to be used, and the approximate equivalent ordinary weights or measures inserted in parenthesis. It is to be distinctly understood that neither this Convention nor the Committee of Revision created by it, intends to have these doses regarded as obligatory on the physician, or as forbidding him to exceed them whenever in his judgment this seems advisable. The committee is directed to make a distinct declaration to this effect in some prominent place in the new Pharmacopœia."

The question of nomenclature is always an important part of pharmacopœial revision. Conservatism here is very desirable. Change merely for the sake of change should be avoided, and it is gratifying to report that this principle is being observed in the present revision. No change is likely to be adopted without strong reasons. Difficulty has been encountered in selecting names for the synthetic remedies, a number of the prominent ones having been admitted, and although the use of long chemical names has been discouraged, in a very few cases it has been impossible to avoid introducing such.

The use of synonyms has been discouraged, and this is in accord with the general principle of placing in the Pharmacopœia prepara-

tions which can be controlled by standards or an official description, and leave no room for evasion. This will require more care on the part of physicians in writing their prescriptions. The extension of the list of synonyms, particularly with pharmaceutical preparations, will often prove a hardship to the druggist. If, for instance, Turlington's Balsam is recognized as a synonym for compound tincture of benzoin, any druggist selling Turlington's Balsam not made strictly by the new Pharmacopœia, will be liable to prosecution, and the sale of Turlington's Balsam made by any other process would invite prosecution. Care in the selection of synonyms is, therefore, very important. One of our Judges in a Western court decided that a grocer who made essence of lemon by a process other than that of the U.S.P., 1890, although it yielded a finer product, was liable to damages, and he was accordingly mulcted. This was due to the fact that the U.S.P., 1890, inserted as a synonym under Spiritus Limonis the words "Essence of Lemon." This will be controlled in the new Pharmacopœia by inserting the following declaration:

"The standards of purity and strength prescribed for any article in the text of this Pharmacopœia are intended to apply to such article only when used for medicinal purposes, and when professedly bought, sold, or dispensed as such."

Again, much annoyance has been experienced through the requirement of pharmacopœial standards when applied to articles used for technical purposes or in the arts, as in the case of muriatic acid and similar products. It is a manifest absurdity to apply pharmacopœial standards to such products.

The subject of weights and measures has attracted some attention recently, and the introduction of alternative quantities into the Pharmacopœia has been advocated by some writers. There may be, of course, two opinions upon this subject, but the instructions of the Pharmacopœial Convention are mandatory, and the President of the Convention has sent to the pharmaceutical journals the following communication:

To the Pharmaceutical and Medical Professions of the United States:

So many communications have been received, either through the mail or through the columns of various pharmaceutical journals, by the Board of Trustees of the U. S. Pharmacopœia, concerning the introduction of alternative formulæ into the Parmacopœia, and so wide a misunderstanding apparently exists concerning the functions of the trustees, that it seems necessary, as

President of the U. S. Pharmacopœial Convention, that I should explain the situation to the pharmaceutical and medical public.

The organization which has been provided for the production of the new U. S. Pharmacopœia consists of the Pharmacopœial Convention, which meets every ten years, in which all authority exists, and from which any right to act is derived. By the Convention are appointed the Board of Trustees and Committee of Revision.

Chapter IV, Article 2 (Abstract of Proceedings of the U. S. Pharmacopœial Convention), states that the "Board of Trustees shall have the management and control of the affairs and funds of this Convention, except as herein otherwise directed," and then continues in detail to direct that the trustees shall transact financial and other allied business; whilst Chapter V, Article 2 (abstract of Proceedings of the U. S. Pharmacopœial Convention), puts the whole preparation of the manuscript of the Pharmacopœia directly under the exclusive control of the Committee of Revision.

It is plain that the Board of Trustees can therefore act only after the Committee of Revision shall have made its report, and that the only function that it has in regard to the manuscript itself is to see that it has been prepared in accordance with the directions of the Convention.

Whether it is wise to introduce into the formulæ of the U. S. Pharmacopœia alternative quantities, is a question well worthy of discussion and of solution. It is plain, however, that the settlement of matters of such primary importance in the Pharmacopœia naturally belongs to the Convention and not to a Committee, and the Convention very properly took action in this matter in 1900. The action taken may or may not have been the best possible, but the right and power of the Convention to act is unquestionable.

Section 7, page 30 (Abstract of Proceedings of the U. S. Pharmacopœial Convention), says in regard to the formulæ: "The Committee (of Revision) is *instructed* to retain the metric system of weights and measures as adopted in the *Seventh Decennial Revision*." The word used in the text is not "advised" or "recommended," but "instructed," and for one or both of the subordinate bodies of the Convention to absolutely disregard the instructions of the Convention, would be a direct breach of faith, and would establish a most disastrous precedent, which would destroy the confidence that any future convention might have in the carrying out of its instructions by its appointed Committee of Revision. Such a precedent might well undermine the whole fabric of Pharmacopœial Revision.

In order to guard against such a calamity, Chapter 5, Article 2, of the Abstract of Proceedings of the U. S. Pharmacopœial Convention, expressly states that the "Committee of Revision shall execute such orders or resolutions as shall have been assigned to it by the Convention." Certainly the duty of obedience could not be more fully formulated.

The U. S. Pharmacopœia has, by the Acts of Congress and of various State Legislatures, been given in the United States the force of law, and it behooves a law-making body to adhere in the closest manner possible to the rules of parliamentary procedure, much more to those of ordinary good faith; so that the question as to whether alternative quantities shall or shall not be used in the formulæ of the U. S. Pharmacopœia is a matter of little importance compared with the question whether the Board of Trustees and the Committee of Revi-

sion shall or shall not comply with the instructions of the body to whose action they owe their existence, and whose mandates they were created to put into execution.

While the process of revision has been actively progressing, an important movement for an International Pharmacopœia of potent remedies met in Brussels in 1903, and drew up a schedule of strength for "Medicaments Heroique." As it is most desirable that the United States Pharmacopœia should act in harmony with this body, and thus in time bring about international uniformity, the strengths of some of the important galenical and pharmaceutical preparations in the new Pharmacopœia will be changed, for instance, tincture of aconite will be reduced to 10 per cent. in strength, syrup of ferrous iodide will be reduced one-half to 5 per cent., while other minor changes will be made. The International Congress adopted the standards of the United States Pharmacopœia for arsenical liquids, namely, 1 per cent.

In conclusion, it may be said of the new Pharmacopœia that while it contains a number of what may be called innovations, these have not been inserted without weighty reasons, and for the purpose of representing the spirit of progress which must ever remain the principal reason for revision. A consideration of the amount of labor made necessary by the principles above outlined should go far to account for the delay of one year in issuing the book.

SOLUTION OF CHLORINATED SODA.

By H. V. Arny and J. F. Wagner.

Noting that samples of this official solution prepared by the class in practical pharmaceutical chemistry invariably proved deficient in chlorine when assayed, the writers undertook an investigation of the causes leading to this deficiency, the object first sought being to learn whether the manufacture of the small quantity assigned to each student (100 grammes finished solution) was a source of error, whether the manufacture of 1,000 grammes would yield a stronger product.

A preliminary analysis of the method of the Pharmacopœia of 1890 revealed at least one fault to which deficiency of chlorine content of the finished product is due.

The Pharmacopœia of 1890 demands that 75 grammes chlorinated lime, containing not less than 35 per cent. available chlorine, should yield 1,000 grammes of solution, containing at least 2·6 per cent. chlorine. The 75 grammes chlorinated lime is supposed to contain 26·25 grammes chlorine (75 × 0·35), and this volatile body is supposed to be held during the entire intricate process prescribed by the Pharmacopœia, resulting in a finished product containing 26 grammes of the 26·25 grammes of available chlorine found in the original lime. How well this is accomplished the figures given below well show.

The very volatility of the available chlorine in the preparation under discussion precludes the manufacture of the solution by the process of 1890 with a loss so small as that just given. The loss of chlorine by volatilization is known to all, but the following figures express the fact still more strongly:

	Per Cent. Cl.
Solution of chlorinated soda, assayed on day of manufacture . .	1·89
" " " " two days after " . .	1·87
" " " " one week " " . .	1·72

The point may be raised that a minimum of 35 per cent. available chlorine is demanded by the Pharmacopœia of 1890, and that the use of a stronger chlorinated lime will insure full strength Labarraque's solution.

But is it a simple matter for the retail pharmacist to secure full strength chlorinated lime?

Stevens (Proc. Mich. Ph. Assn., 1897, p. 42, through Proc. A. Ph. A.) reports an examination of thirty-two samples, with results showing chlorine strength varying from less than 1 per cent. to 31 per cent.

Puckner (Proc. Ill. Ph. Assn., 1897, p. 70, through Proc. A. Ph. A.) reports on ten samples, showing that bulk chlorinated lime varied from 31·5 per cent. to 34·6 per cent. available chlorine, while that in packages ranged from less than 1 per cent. to 23·65 per cent.

Even the firm of Squibb, so noted for careful selection of the best in the drug line, makes no pretenses of furnishing lime of Pharmacopœial strength, labeling their product, "32 per cent. to 35 per cent. available chlorine." And it might be added that the two samples of chlorinated lime used in the following experiments were Squibb products; yet both assayed under 30 per cent. available chlorine, thus showing that a marked deterioration had occurred during the time it was in the jobber's hands.

And yet the retailer is supposed to take a chlorinated lime; macerate with three successive portions of water, with no especial care to either obtaining a definite quantity of filtrate or of insuring complete exhaustion of the lime; treat the filtrate with warm sodium carbonate solution; warm the mixture, if gelatinous; and, finally, filter; to do all this in open vessels and still get a finished filtrate containing 26 of the 26·25 grammes of chlorine supposedly contained in the original substance.

Verily, this result is what our German friends would call "fast quantitativ," and is on a par with the ease and simplicity (theoretical) of the Pharmacopœial method of making spirit of ammonia and with the airy directions given for making the official iodized sulphur.

Perhaps some hair-splitting chemist, by some miracles of chemical manipulation, may secure perfect results from the Pharmacopœial methods of making the three substances just cited; but it is the opinion of the writers that these methods are far beyond skill of the retail pharmacist for whom the recipes are originally intended.

Let us give figures obtained in the manufacture and assay of several lots of Labarraque's Solution by the process of 1890, and let it be explained that we will, in the tabulated statements, make use of the following abbreviations:

Labarraque	= Solution of chlorinated soda.
Lime	= Chlorinated lime.
Hypochlorite Sol.	= Solution of chlorinated lime, the intermediate product in the method of the U.S.P., 1890, for making Labarraque.
Lime residue	= The chlorinated lime supposedly exhausted with water by the process of 1890.

In the first two experiments, having previously found the lime deficient in chlorine, the amount of that chemical employed in the process was increased in direct proportion to its chlorine deficiency, with a view to start with same amount of chlorine demanded for official chlorinated lime. This necessitated addition of extra sodium carbonate to insure complete precipitation.

The titration, as mentioned above, was performed by the method of the U.S.P., 1890, adding potassium iodide and hydrochloric acid to a definite quantity of the solution and titrating the liberated iodine against decinormal sodium hyposulphite V. S.; starch mucilage being used as the indicator. In the following tables this volumetric solution is abbreviated to $\frac{N}{10}$ Thio.

Experiment A.—Method, U.S.P., 1890; 100 grammes. Used 10·1 grammes lime containing 26 per cent. Cl = 26·26 grammes Cl. Obtained 80 c.c. hypochlorite solution, 100 grammes Labarraque, —— grammes lime residue.

6·74 gms. Labarraque required	38·3 c.c.	$\frac{N}{10}$	Thio, equalling	0·13935 gms.	Cl.
10· " Labarraque required	56·8 "	$\frac{N}{10}$	Thio, equalling	0·2009 "	"
Average 10 gms. " contained				0·200895 "	"
6·74 gms. hypochlorite sol. req'd.	54·1 c.c.	$\frac{N}{10}$	Thio, equalling	0·19135 "	"
Average 10 gms. " " contained				0·28384 "	"
Whole lime residue required . .	77·8 c.c.	$\frac{N}{10}$	Thio, equalling	0·27517 "	"

CONCLUSIONS.

The lime contained	2·626	gms. Cl.
" hypochlorite solution contained		
" Labarraque contained	2·0089	" "
" lime residue "	0·27517	" "

Experiment B.—Method, U.S.P., 1890; 1000 grammes. Used 101 grammes lime containing 26 per cent. Cl = 26·26 grammes Cl. Obtained 530 c.c. hypochlorite solution, 1000 grammes Labarraque, —— grammes lime residue.

6·74 gms. Labarraque required	39·4 c.c.	$\frac{N}{10}$	Thio, equalling	0·3935 gms.	Cl.
10· " " "	58·5 "	$\frac{N}{10}$	Thio, equalling	0·2069 "	"
Average, 10 gms. Labarraque contained				0·206825 "	"
" 1000 " " "				20·6825 "	"
6·74 gms. hypochlorite sol. req'd	74·6 c.c.	$\frac{N}{10}$	Thio, equalling	0·26386 "	"
10· " " " "	110·7 "	$\frac{N}{10}$	Thio, "	0·39156 "	"
Average, 10 gms. " " contained				0·39151 "	"
Total lime residue required . .	— c.c.	$\frac{N}{10}$	Thio, equalling	—— "	"

CONCLUSIONS.

The lime contained	26·26	gms. Cl.
" hypochlorite solution contained	——	" "
" Labarraque contained	20·6825	" "
" lime residue "	——	" "

It will be noticed that the figures in the two experiments just given are incomplete; because the work was merely preliminary.

They are given, however, because they show that the addition of an extra amount of chlorinated lime does not raise the chlorine value of the finished Labarraque to the normal, even when the increase in amount is directly proportionate to the deficiency in the chlorine strength of the lime.

Finding this plan of making up the deficiency of commercial chlorinated lime unavailing, and choosing as our main object a demonstration of the loss of chlorine in each of the three stages of the 1890 method, in future experiments with the process of 1890, we employed the pharmacopœial amount of chlorinated lime—75 grammes to 1000 grammes finished solution. Thus we try to show what would result in the manufacture of Labarraque by a retail pharmacist who uses the best chlorinated lime offered him in the open market.

In most of the experiments the same lime was employed, it being titrated from time to time to notice loss of chlorine on standing, the exact chlorine strength being indicated in each case.

Experiment C.—Method, U.S.P., 1890; 100 grammes. Used 7·5 grammes lime containing 28·8 per cent. Cl = 2·16 grammes Cl. Obtained 42 c.c. hypochlorite solution, 97 c.c. (100 grammes) Labarraque, —— grammes lime residue.

1 c.c. Labarraque required	5 c.c. $\frac{N}{10}$	Thio, equalling	0·017685	gms.	Cl.
5 c.c. " "	25·1 c.c. $\frac{N}{10}$	Thio, "	0·887787	"	"
Average, 10 c.c. Labarraque contained			0·1772	"	"
" 97 c.c. " "			1·7188	"	"
5 c.c. hypochlorite sol. req.	59·3 c.c. $\frac{N}{10}$	Thio, equalling	0·209744	"	"
42 c.c. " " contained			1·761849	"	"
Whole lime residue required	53·6 c.c. $\frac{N}{10}$	Thio, equalling	0·18958	"	"

CONCLUSIONS.

The lime contained	2·16	gms.	Cl.
" hypochlorite solution contained	1·76	"	"
" Labarraque contained	1·7188	"	"
" lime residue "	0·1895	"	"

Experiment D.—Method, U.S.P., 1890; 1000 grammes. Used 7½ grammes lime containing 28·3 per cent. Cl = 21·225 grammes Cl. Obtained 450 c.c. hypochlorite solution, 1000 grammes (970 c.c.) Labarraque, —— grammes lime residue.

1 c.c. Labarraque required 5 c.c. $\frac{N}{10}$ Thio, equalling 0·017685 gms. Cl.

5 c.c. " " 25·1 c.c. $\frac{N}{10}$ Thio, equalling 0·0887787 " "

Average, 10 c.c. Labarraque contained . . . . . 0·1772 " "

" 970 c.c. (1000 gms.) Labarraque contained . . . 17·1887 " "

5 c.c. hypochlorite sol. req. 60·3 c.c. $\frac{N}{10}$ Thio, equalling 0·21328 " "

450 c.c. " " contained . . . . . 19·1953 " "

Whole lime residue required 363 c.c. $\frac{N}{10}$ Thio, equalling 1·2839 " "

CONCLUSIONS.

The lime contained . . . . . 21·2250 gms. Cl.
" hypochlorite solution contained . . . . . 19·1953 " "
" Labarraque contained . . . . . 17·1887 " "
" lime residue " . . . . . 1·2839 " "

Experiment E.—Method U.S.P., 1890; 1,000 grammes. Used 75 grammes containing 28·1 per cent. Cl = 21·075 grammes Cl. Obtained 432 c.c. hypochlorite solution, 1,000 grammes (969 c.c.) Labarraque, 71 grammes wet lime residue.

1 c.c. Labarraque required 5·2 c.c. $\frac{N}{10}$ Thio, equalling 0·0183924 gms. Cl.

5 " " " 26·1 " $\frac{N}{10}$ Thio, " 0·0923157 " "

Average—10 c.c. Labarraque contained . . . . . 0·184277 " "

" 969 c.c. (1,000 grammes) Labarraque contained, 17·8564 " "

1 c.c. hypochlorite sol. required 12·2 c.c. $\frac{N}{10}$ Thio, equalling 0·0431514 " "

5 " " " " 61·5 " $\frac{N}{10}$ Thio, " 0·2175255 " "

Average—10 c.c. hypochlorite sol. contained . . . . . 0·43328 " "

" 432 " " " " . . . . . 18·7176 " "

2 gms. lime residue required 13·4 c.c. $\frac{N}{10}$ Thio, equalling 0·473958 " "

71 " " " contained . . . . . 1·6825 " "

CONCLUSIONS.

The lime contained . . . . . 21·075 " "
" hypochlorite sol. contained . . . . . 18·7176 " "
" Labarraque " . . . . . 17·8564 " "
" lime residue " . . . . . 1·6825 " "

Thinking that a possible source of chlorine loss in the foregoing experiments might be found in the calcium carbonate precipitate from which the finished Labarraque is filtered, two samples of this were assayed:

Whole precipitate from Experiment C contained but . . . . 0·032807 gms. Cl.
" " " " E " " . . . . 0·10477 " "

The amounts represent, respectively, 1·3 per cent. and 0·4 per cent. of chlorine, with which we began, and show that the washing of the precipitate with the water needed to bring the finished Labarraque to the required weight, if carefully carried out, removes all but the last traces of chlorine.

Therefore, whatever loss occurs during the manufacture of Labarraque's Solution, is due either to retention of chlorine in the chlorinated lime residue or to evaporation of chlorine during the process of manufacture.

Since the process of 1880 prevented, as far as possible, loss by evaporation, experiments were made to see if the process on the whole was superior to that of 1890.

It will be recalled that the U.S.P. of 1880 directs mixing of the chlorinated lime with water in a tightly covered vessel and to the paste is added the sodium carbonate solution and finally sufficient water to bring the mixture to a definite weight. Lastly, the clear solution is syphoned from the precipitate.

By this method loss of chlorine through evaporation is largely avoided, and results given below show the advantage of this precaution. On the other hand the following figures show that the chlorinated lime is poorly extracted, and that this disadvantage outweighs the advantage gained by prevention of evaporation.

Experiment F.—Method of U.S.P., 1880; 1,000 grammes; made from 80 grammes lime containing 28·3 per cent. Cl = 22·64 grammes Cl. From this obtained 759 grammes (724·45 c.c.) Labarraque and 241 grammes moist lime residue:

1 c.c. Labarraque required	6·6 c.c.	$\frac{N}{10}$	Thio, equalling	0·02334	gms. Cl.
5 " " "	33·2 "	$\frac{N}{10}$	Thio, "	0·1174	" "
Average—10 c.c. Labarraque contained				0·23414	" "
" 724·45 c.c. " "				16·9629	" "
2 gms. lime residue required	11·1 c.c.	$\frac{N}{10}$	Thio, equalling	0·03926	" "
241 " " " contained				4·7309	" "

CONCLUSIONS.

The lime contained	22·64	"	"
" Labarraque contained	16·9629	"	"
" lime residue "	4·7309	"	"

Experiment G.—Method of U.S.P., 1880; 1000 grammes. Made from 80 grammes lime containing 28.3 per cent. chlorine = 22.64 grammes Cl. From this obtained 805 grammes (767 c.c.) Labarraque, and 195 grammes moist lime residue.

1 c.c. Labarraque required . .	6.35 c.c. $\frac{N}{10}$ Thio,	equalling	0.022459 gm.	Cl.
5 c.c. " " . .	31.8 " $\frac{N}{10}$ Thio,	"	0.11247 "	"
Average, 10 c.c. Labarraque contained			0.22477 "	"
" 767 " " "			17.2403 gms.	"
2 gms. moist lime residue req'd 12.5 c.c. $\frac{N}{10}$ Thio,		equalling	0.04421 gm.	"
195 " " " " contained			4.3102 gms.	"

CONCLUSIONS.

The lime contained	22.64 gms.	Cl.
" Labarraque contained	17.2403 "	"
" lime residue "	4.3102 "	"

Since the process of 1880 seemed to show no chance of variation when manufacturing different quantities, no experiment involving the manufacture of 100 grammes was made.

It will be seen from the two experiments just given that the retention of chlorine by the insoluble lime residue is enough to render the process more wasteful of chlorine than that of 1890. Another objection is found in the uncertainty as to the amount of finished solution; since the lime residue is included in the final weight of the preparation.

The latter disadvantage could be remedied in an ideal recipe by washing the residue with water, sufficient to bring the finished solution to a definite weight. Perhaps such washing may prove successful in removing most of the chlorine from the residue, though the evaporation of chlorine during washing is a factor to be considered.

Experiments based on the lines just suggested are being carried on and will be published, provided the Pharmacopœia of 1900 does not make the much needed change.

CONCLUSIONS.

(1) The process of manufacture of solution of chlorinated soda given by the Pharmacopœia of 1890 will not yield in the hands of the average operator a product of official chlorine strength.

(2) It leads to loss of chlorine, and that at every stage of the operation; part being retained by the incompletely washed chlorin-

ated lime, and part lost by vaporization; this loss being shown, not only in the finished solution, but also in the intermediate product, solution of calcium hypochlorite.

(3) The process of U.S.P., 1880, is even more wasteful of chlorine than is that of 1890. The loss is chiefly from one cause, however—retention of chlorine by the lime residue. The loss by evaporation is much less than in the process of 1890, and altogether it is a more sensible process, the chlorine strength being easily within the limits required by the Pharmacopœia.

(4) While the process of 1880 is more wasteful of chlorine, the finished Labarraque is a stronger body than that yielded by the process of 1890.

(5) A comparison of chlorine loss in the process of the two Pharmacopœias is shown in the following tabulation of experimental data:

U. S. P., 1890.

	Gms. Cl.	Per Cent. of Total Chlorine.
A. 100 gms. Labarraque =	2·0089	
Lost in lime residue =	·2751	10·4
" by evaporation =	·3420	13.0
10·1 gms. lime contained	2·6260	——
Chlorine loss during entire operation		23·4
C. 100 gms. Labarraque =	1·7188	
Lost in lime residue =	·1895	8·7
" by evaporation =	·2517	11.6
7·5 gms. lime contained	2·1600	——
Chlorine loss during entire operation		20·3
D. 1000 gms. Labarraque =	17·1887	
Lost in lime residue =	1·2839	6·05
" by evaporation =	2·7524	12·96
75 gms. lime contains	21·2250	——
Chlorine loss duriug entire operation		19·
E. 1000 gms. Labarraque =	17·8564	
Lost in lime residue =	1·6825	7·9
" by evaporation =	1·5361	6·2
75 gms. lime contained	21·0750	——
Chlorine loss during entire operation		14·2

U. S. P., 1880.

F.	759 gms. Labarraque	= 16·9629	
	Lost in lime residue	= 4·7309	20·9
	" by evaporation	= ·9462	4·1
	80 gms. lime contained	22·6400	——
	Chlorine loss during entire operation		25·
G.	805 gms. Labarraque	= 17·2403	
	Lost in lime residue	= 4·3102	19·
	" by evaporation	= 1·0895	4·8
	80 gms. lime contained	22·6400	——
	Chlorine loss during entire operation		23·8

PHARMACEUTICAL LABORATORY,
CLEVELAND SCHOOL OF PHARMACY, April, 1904.

THE ORIGIN AND FORMATION OF HONEY, AND ITS RELATION TO THE POLARISCOPE.

BY WM. A. SELSER.

The origin and formation of honey is the result of a combination, and a combination which nothing else can duplicate. (1) The nectar from the plant life. (2) The action of the bee in its own body. (3) Its deposition and evaporation.

No other known sweets that could be gathered by the bee would result in honey, although the two second combinations might be present. For instance, quite a lot of very bad adulteration is palmed off on the public by feeding the bees a dilution of cane sugar. Root (page 200, of the 1903 edition of the *Honey Bee*) states that sugar syrup fed to the bees might be chemically a sort of honey, yet be a fraud on the consumer. I am glad to state it would never be a fraud on the chemist. No adulteration would be easier detected. Then we have again, for the first combination, the honey dew produced by the excretion of a plant louse sprayed, as it were, upon the leaves of the plant, and gathered by the bees. This is not honey, nor could any process by man yet discovered take the first combination, nectar from the plant life, without the agency of the bee and by any chemical manipulation produce honey. We have a very pleasant sweet produced by man from maple nectar boiled down, commonly known as maple sugar.

Like the question once asked: "When a rifle bullet was shot through a board, which went through first—the bullet or the hole?" They naturally go together. So we would answer when asked which would be the most important factor in the production of honey—the nectar or the bee? we would say, they inseparably must go together.

The first combination (nectar) as produced by nature under certain conditions, primarily possibly for the fertilization of the blossom, is a very thin, watery fluid, insipidly sweet, with very little flavor. This fluid is taken into the mouth of the bee and chemically changed, and by the salivary secretion being mixed with the fluid supplied by large glands from the head and thorax, converting this fluid into dextrose and levulose, resulting in a fruit-sugar or honey, then deposited by the bee in the little wax cells and evaporated by the action of the bee's wings under a high temperature about 50 per cent., and then capped over and sealed like a housewife would seal fruit when it is about 75 per cent. or 85 per cent. solid, ripe honey containing on the average about 15 per cent. to 25 per cent. of water.

A great deal of honey is of a poor quality on account of the bee-keeper rushing his product to the market and extracting it before it is thoroughly evaporated. This causes fermentation and destroys both quality and flavor. Formic acid, as made by the bee, makes honey somewhat of an antiseptic, preventing decomposition.

POLARISCOPE.

While there are a number of methods of analyzing honey to determine its adulteration, yet by the aid of the polariscope is the only acknowledged method to-day that has any degree of certainty in its results.

In the bulletin published by the U. S. Department of Agriculture, in the year 1892, Bulletin No. 13, Division of Chemistry, we have a very full and complete result of vast researches in the line of the polariscope work. On page 789 of that bulletin, we have the analysis by the polariscope of honeys that are given at dextro-rotation. This at first might baffle the chemist, but the invert or second reading has classed them in a separate class by themselves.

On page 801 we have the statement that at the present time no genuine samples of honey collected in this country have shown a right-handed rotation; yet the suspicion is thrown out that a honey gathered from the excrescence of the pine tree shows a low right-hand reading, and yet might be classed as pure.

In trying to perfect myself in polariscope work, this thought has been a great bone of contention in all my laboratory work. I visited personally Professor Wiley, chief of the Bureau of Chemistry, and he acknowledged that this was the one great drawback in the positive proof of low reading right-handed honeys. It did not suggest itself at that time, which was about the year 1895, that there was any method by which positive proof could be obtained. In analyzing honey by the polariscope for the Pure Food Inspector of the National Bee-keepers' Association in nearly all the Western States, I never ran across any honey which showed this peculiarity gathered from the excrescence of the pine.

In 1902 a large syrup-packing company of San Francisco shipped to the East several car loads of bottled honey, one car load coming to Philadelphia, and distributed by the commission men to the grocery trade generally. I secured several samples of this honey, and found that it showed under the first reading + 2·5 and under the invert reading — 1·5. I immediately pronounced this as adulterated, and so informed the trade. I had my opinion confirmed by L. F. Kebler, now of Washington, but at that time chief chemist of the Smith, Kline & French Company.

I then went to Washington and had the same sample analyzed in the Department Laboratory; and after a long consultation with Professor Wiley, he distinctly stated that while he felt there was a grave suspicion of adulteration, it could not be proven. In other words, "guilty but not proven." The Professor said it looked to him as if that showed a trace of gathering from the pine of California. I was completely stunned in my opinion at this conference, for I felt that the whole work of the polariscope was uncertain and the whole chain of evidence was only strongest at its weakest link. I immediately came to the conclusion that there was only one positive proof, and that was for a practical apiarist to visit the large apiaries in the United States, wherever practicable, watch what the bees were working on, take the honey out of the hives, and analyze it for the results. I started on a three months' tour, costing me $1,500—visiting the large apiaries of the South and West, going as far as Vera Cruz, Mexico. My closest and most careful observations and samples were from California, as this sample of honey in question was said to come from Santiago County.

All my samples gathered outside of California, except from Mosquoit, in Texas, would show a left-hand first reading of — 8 9,

invert, reading of — 10 and a fraction up. In Santiago County I secured seven samples of the White Sage, the lowest reading being — 12.8; first invert, — 16·6. The highest reading being — 18·7 and — 22 invert. The Black Sage showed a lower reading, — 6·0; second, — 8.3. The Wild Buckwheat, in the hills of Santiago County, showed a reading of — 9 first, — 12 second. The Prune Bloom, near Los Gatos, showed also a low reading of first, — 6·5; invert, — 6·5. Some samples of the Orange Blossom also showed as low a reading as — 5·4, but I found the average of this — 7.

The most important sample secured was from an apiary situated right in the midst of the pine forests in the mountains, to the extreme east of Redlands. This was taken from different hives and showed, first reading, — 14; second reading, — 23·2; but the lot of samples showed an average of the first reading, — 15.

I then felt I had sufficient proof that the parties who had packed this honey had adulterated it, but wanting to exhaust every avenue of proof, I visited San Francisco, staying there a considerable time, employing detectives to visit this large packing house, and I there had sufficient proof to show that cane sugar and glucose had been used in large quantities in their establishment. A most significant fact was, while this packing company wrote to the grocers in the East, positively denying my charges, saying the honey was strictly pure, I never, individually, heard a word further about it, but the very next season I received a sample from this company with the price of the analysis accompanying it, and found the results showed a first reading, — 17; invert, — 21·6, showing that this article was strictly pure, and that they had used honey from an entirely different source from that previousy packed.

On my return the Department of Agriculture wrote me for a copy of my analysis, and I received this extract from the reply of Chief Wiley:

"The remarkable fact is shown by your investigations that even honey gathered in the vicinity of the pine trees is strictly left-handed. The honey still shows the peculiarities that led me to believe it an adulterated or artificial honey, and the result which you have obtained is entirely corroborative of that view. I believe that under pure food laws, a conviction could be had upon the evidence in this case, especially when compared with all the other data of California honeys which you have collected. You certainly have

gone into this in a most painstaking and thorough manner, and deserve the praise of all interested in pure honey for what you have done. You will understand that we place our laboratories always at the service of anyone who is interested in stamping out adulteration in honey, or in foods of any kind.

"Respectfully, (Signed) H. W. WILEY, *Chief.*"

I fully believe that the result of this experiment will enable us to prove before any court of law the adulteration of any honey yet put up in the United States for commercial purposes.

JENKINTOWN, PA.

ELIZABETH MARSHALL, THE FIRST WOMAN PHARMACIST IN AMERICA.

BY M. I. WILBERT,
Apothecary at the German Hospital, Philadelphia.

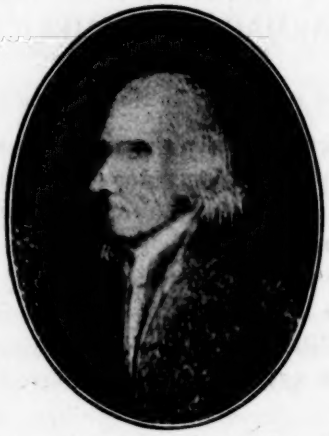
It may not be generally known that it is now a full hundred years since a woman first presided over an apothecary shop in Philadelphia, and that this, so far as known, was the first pharmacy in America to be so controlled.

The circumstances that led up to the opening of the shop in the modest parlor of the house, then 56 Chestnut Street, were referred to by Mr. Evan T. Ellis, in his story of "A Very Old Drug Store" (A. J. P., 1903, page 57), and will be referred to again, at some length, later on.

Elizabeth Marshall was the oldest daughter and the oldest living child of Charles Marshall, the first President of the Philadelphia College of Pharmacy, or, as it was then called, "The Philadelphia College of Apothecaries." She was born in the house 56 Chestnut Street, old number, on January 28, 1768. As a child she was much in the company of her grandfather, Christopher Marshall, and appears to have been his favorite grandchild, being repeatedly mentioned, in a commendatory way, in the unpublished portions of his diary, now in the possession of the Pennsylvania Historical Society.

Some of the details of the business conducted by Christopher Marshall and his lineal descendants may not be out of place here, despite the fact that much has been but recently told by Mr. Ellis in the paper referred to above.

Christopher Marshall in the early decades of the eighteenth century was one of the very few druggists in Philadelphia. His shop is described by the annalist of the time as being "In a two-storied building with a projecting roof, from which was suspended a large gilded ball." This sign was characteristic of this early shop, which was usually referred to as being "at the sign of the golden ball." In this modest shop, at 46 Chestnut Street, near Second, Christopher Marshall kept on hand such medicinal preparations as were used by the medical men of those days, in their practice, and also sold such household remedies, herbs, spices and tea, as were thought necessary to supply the modest wants of the pioneer residents of Philadelphia.



CHARLES MARSHALL.

The First President of the Philadelphia College of Pharmacy, from a Water-Color in Possession of Charles Marshall, Germantown.

Having amassed what was, at that time, considered to be a liberal competence, Christopher Marshall retired from active business in 1771, and was succeeded by his three sons, Benjamin, Christopher, Jr., and Charles Marshall. The business was conducted at 46 Chestnut Street by Benjamin Marshall & Brothers until the death of the elder brother, Benjamin, in 1778, when the business was continued by Christopher, Jr., and Charles Marshall.

It is probable that this store was one of the first in which physicians' prescriptions were compounded; exactly when this innova-

tion was introduced does not appear, and there is no positive evidence that such is the case. From the fact, however, that Dr. Abraham Chovet, one of the first physicians in this country to write prescriptions, was an intimate friend of the family, particularly of Christopher Marshall and his two remaining sons, it is quite probable that he patronized the store with which they were connected.

The firm gradually increased their business, and besides being importers as well as exporters of all kinds of crude drugs and doing a general wholesale and retail drug business, also ventured into the manufacture of chemicals.

ELIZABETH MARSHALL.
From a Silhouette in Possession of Charles Marshall, Germantown.

This manufactory is referred to, in "Watson's Annals of Philadelphia," as being in "a grim and forbidding-looking building on Third Street near the stone bridge over the Cohocsink." It was generally shunned by the small boy of that period on account of the gruesome tales that had been circulated in connection with it and also on account of the noisome odors that emanated from it at certain times. Christopher Marshall died May 6, 1797, aged eighty-seven years and five months. Shortly after this Charles Marshall retired from active business, retaining, however, a pecuniary interest in the firm.

The unfortunate circumstance that brought disaster to the now aged Charles Marshall is recorded in the biographical sketch by

Dillwyn Parrish (A. J. P., 1865, page 242), as follows: "A few years after his retirement from active business, the establishment, with which his name had been for many years associated, loaned the endorsement of the firm to a large amount, and involved all connected with it in bankruptcy. The senior partner, who was entirely ignorant of these proceedings, was then in advanced life, but met the shock with fortitude and without hesitation gave up his property for the benefit of his creditors.

"This sad occurrence made it necessary to change his manner of life, and in 1804 it was concluded that his daughter Elizabeth, a lady of singular good sense and varied attainments, should open a store and conduct the business of a pharmaceutist, with the aid of her father. The small front parlor of their dwelling, then 56 Chestnut Street, opposite Strawberry Alley, was appropriated to this purpose."

In this connection it may be of interest to note that the name, Elizabeth Marshall, apothecary, does not appear in any of the early directories of Philadelphia; it does appear, however, as a contributor to the Pennsylvania Hospital, in the printed records of that institution.

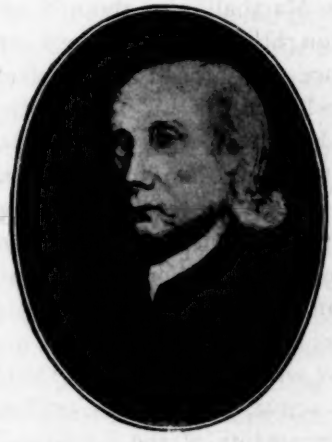
That the store at 56 Chestnut Street was well thought of at the time, would appear from the following quotation, taken from an address by Daniel B. Smith, delivered before the Philadelphia College of Pharmacy, September 24, 1829. (A. J. P., 1829, page 241.)

"Less than thirty years ago almost the only apothecary's shop in Philadelphia, where the physician was sure of obtaining the latest foreign preparations, of having his medicines prepared under the eye of the master and with competent pharmaceutic skill, or in which a strict system of accountability was carried through the details of the shop, was that of Charles Marshall, the first president of this institution."

When we remember that all of the details of this shop were presided over by the daughter, it is indeed a well-merited compliment. From a monetary point of view, the business was successful from the very start. This was, no doubt, largely due to the fact that many of the leading physicians and business men, sympathizing with the misfortune that had come to Charles Marshall, a man well known and greatly admired for his probity and ability, were liberal in their patronage. It was little wonder then that the business grew rapidly, and that the store had to be repeatedly enlarged to meet the constantly-increasing demands for space.

The number of apprentices gradually increased until as many as twelve were employed at one time. Among these early apprentices were some of the most prominent pharmacists of Philadelphia, and it may well be said that all of them, in later years, were grateful indeed for the practical training they received from this skilled and highly efficient woman pharmacist.

In the matter of practical contributions this store was also one of the first to appreciate the necessity of and to provide distinctly American preparations. Many of the preparations now extensively



Christopher Marshall

From a Painting in Possession of Charles Marshall, Germantown.

used originated in this store, and were first made popular as the favorite prescriptions of one or the other of the Philadelphia practitioners of that time. Among the more widely known of these preparations, we may mention brown mixture, the mistura glycyrrhizæ composita of the United States Pharmacopœia. This preparation is said to have originated in this store about 1814, as the favorite prescription of Dr. Benjamin Smith Barton, a well-known American botanist and teacher of materia medica, and the suc-

cessor of Dr. Benjamin Rush as professor of the practice of medicine in the medical school of the University of Pennsylvania.

That Elizabeth Marshall was a good business woman is evident from the fact that the shop over which she presided not alone supplied a suitable living for herself, her father and other members of her family, but also contributed no mean sums to worthy charities, and finally enabled her to retire with a competence after a business career of not more than twenty-two years.

The father, Charles Marshall, died August 22, 1825, in his eighty-second year. Dillwyn Parrish, in his biographical sketch quoted above, gives the following interesting description of him:

"In stature Charles Marshall was about 6 feet high, of slender mould, clear complexion, blue eyes and graced with a benignant expression of countenance, heightened in its effect, toward the end of life, by the snowy whiteness of his hair, which in ample volumes descended nearly to his shoulders. His costume was uniformly plain in color, being the drab then in vogue with the Society of Friends, of which he was a consistent and lifelong member."

Shortly after her father's death Elizabeth Marshall sold out her interest in the store to two of her former apprentices, Charles Ellis and Isaac P. Morris, and retired from active business.

The remaining years of her life were spent quietly, but not idly. One contemporaneous writer says of her: "While life lasted she was devoted to those active, yet unobtrusive duties of benevolence which are the chief ornaments of the Christian character. Even when afflicted by disease she was not unmindful of those who, by vicissitudes incident to man, were made dependent on the hand of charity. She was beneficent and kind to all, and dispensed her charities with a liberal hand."

Another writer says: "The uniform cheerfulness which she displayed under every circumstance evinced that conscious rectitude and peace of mind which ever adorns the Christian."

Elizabeth Marshall died July 26, 1836. The simplicity and purity of her character, coupled with her skill and probity in business, and her benevolence and charity in private life, made her well known and highly respected by all classes of society. But for us, and for future generations, it is her heroic spirit of self-sacrifice, that, above all, is particularly attractive, and makes her worthy of emulation for all times to come.

THE NOMENCLATURE OF THE GLYCEROPHOSPHATE PREPARATIONS.

By Melvin W. Bamford.

At this time, when preparations of the salts of glycerophosphoric acid are attracting considerable attention, it might be of advantage to make an effort to secure some degree of uniformity in the strength and nomenclature of these preparations. Something should certainly be done in this direction because otherwise there appears to be danger that there will be the same confusion with preparations of glycerophosphates as has always existed with preparations of the hypophosphites. With this latter class it has never been possible for a physician to know what would be used in his prescription for compound syrup of hypophosphites, nor for a pharmacist to know just what a physician might mean when he wrote compound syrup of hypophosphites. Under this title we have any number of preparations ranging from one containing only the salts of calcium, sodium and potassium, to one containing iron, manganese, strychnine and quinine in addition to the first three mentioned.

For a parallel case with the glycerophosphates we find, on referring to the price lists of two of the largest manufacturers of pharmaceuticals in the country, that one lists a preparation containing the salts of calcium, sodium, potassium and iron as compound elixir of glycerophosphates, and the other manufacturer under exactly the same title lists a preparation containing calcium, sodium, iron, manganese, quinine and strychnine.

For some reason, which is not altogether apparent, these preparations of the glycerophosphates are only from a half to a third as strong as the preparations of the hypophosphites. The difference in the price of the salts probably has some influence on this, the cost of the glycerophosphates being about three times as high as the cost of the hypophosphites.

Pharmaceutically and medicinally there seems to be no reason why the glycerophosphate preparations should not be made as concentrated as those of the hypophosphites. This is especially apparent when it is considered that Dr. Robin, to whose work these salts in large degree owe their popularity, used a more concentrated solution and in relatively larger doses than is provided for by most of the preparations now on the market. The syrup of Dr. Robin's,

which was his favorite formula, contains approximately 65 grammes of glycerophosphates in 1,000 grammes of syrup, while the U.S.P. syrup of hypophosphites contains 75 grammes in 1,000 c.c., which would make them very nearly equal in total salt content.

Considering that these preparations of the glycerophosphates are nearly all made up with a hydro-alcoholic base and are used largely in nervous disorders, and that their use in some cases is continued for months, it would seem very desirable to administer them in small doses rather than large doses; in other words, to make the preparations more concentrated.

In view of these conditions, the writer has prepared a set of resolutions for your consideration, to be discussed and amended if deemed advisable, which it is hoped will prevent an increase in this confusion, and possibly aid in remedying existing conditions.

RESOLUTION.

Whereas, There seems to be danger that the preparations of the glycerophosphates are getting into the same state of confusion, as to strength and nomenclature, as the preparations of the hypophosphites:

Whereas, There is no apparent reason why the nomenclature and strength of the preparations of the glycerophosphates should not conform with those of the hypophosphites in the United States Pharmocopœia and National Formulary; therefore be it

Resolved, That the assembled members of the Philadelphia College of Pharmacy use their influence toward that end, and do hereby endorse the strength and nomenclature given in the following list of those preparations, which in each case correspond with the preparations of the hypophosphites in the United States Pharmacopœia and National Formulary:

Elixir gycerophosphatum, elixir of glycerophosphates, 1,000 c.c., to represent:

Calcium glycerophosphate	45 grammes.
Potassium glycerophosphate	15 "
Sodium glycerophosphate	15 "

Elixir glycerophosphatum cum ferro, elixir of glycerophosphates with iron, 1,000 c.c., to represent:

Calcium glycerophosphate	25 grammes.
Potassium glycerophosphate	15 "

Sodium glycerophosphate . . . . . 15 grammes.
[1] Iron glycerophosphate . . . . . 10 "

Elixir calcii et sodii glycerophosphatum, elixir of calcium and sodium glycerophosphates, 1,000 c.c., to represent:

Calcium glycerophosphate . . . . . 35 grammes.
Sodium glycerophosphate . . . . . 35 "

Elixir glycerophosphatum compositum, compound elixir of glycerophosphates, 1.000 c.c., to represent:

Calcium glycerophosphate . . . . . 35 grammes.
Potassium glycerophosphate . . . . . 17·5 "
Sodium glycerophosphate . . . . . 17·5 "
Iron glycerophosphate . . . . . 2·25 "
[2] Quinine glycerophosphate . . . . . 1·125 "
[3] Strychnine glycerophosphate . . . . . ·33 "

THE NESTOR OF CHICAGO PHARMACY.

By Albert E. Ebert.

Ezekiel Herbert Sargent; born at Dover, N. H., November 13, 1830; died at Chicago, April 24, 1904.

Mr. Sargent lived with his parents until six years of age, when he went to live with his half-brother at Lowell, Mass. After eight years of schooling, he was, at the age of fourteen years, apprenticed to the drug business with the firm of Carleton & Hovey, Lowell, Mass., with whom he remained for seven years. Among his clerk associates at this store were Chas. T. Carney, of Boston, Mass.; Henry M. Whitney, of Andover Depot, Mass.; Fred W. Willis and James W. Mill, later of Chicago.

Dr. F. Scammon, one of the pioneer druggists of Chicago, seeking a competent associate in his established drug business, was recommended by Messrs. Cutler Brothers, wholesale druggists, of Boston, Mass., to secure Mr. Sargent for such position. Dr. Scammon invited Mr. Sargent to come to Chicago, which he did, arriving in the early part of 1852. A partnership was formed under the firm name of F. Scammon & Co., consisting of Dr. Franklin Scammon, Myrick L. Scammon and E. H. Sargent, to succeed to the business of F. Scammon, 119 Lake Street, and which had just been removed to its new quarters at 140 Lake Street. Mr. Sargent

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[1] This is ferrous lactate in the hypophosphite preparation.
[2] This is quinine hydrochlorate in the hypophosphite preparation.
[3] This is an equivalent quantity of tincture of nux vomica in the hypophosphite preparation.

assumed the general management of the drug business, which at that time was largely wholesale, Mr. Myrick Scammon giving his attention to a side line of the business, consisting of daguerreotype material, and Dr. F. Scammon looking after the manufacture of linseed oil, which was carried on extensively at that time by the firm of Scammon & Haven. The firm of F. Scammon & Co. did a prosperous business, and was continued until 1856, when it was dissolved. Mr. Sargent associated himself with Mr. John C. Ilsley, a clerk of Sears & Smith, under the firm name of Sargent & Ilsley, and they purchased the drug part of the business of F. Scammon & Co., continuing the same at the old stand as a wholesale and retail drug business. The new firm started out with all the prospects of prosperity; times were good and business was good. But soon the financial horizon throughout the United States began to darken, and the panic in the fall of 1857 burst in all its fury over the Northwest, and many of the strongest business firms went to the wall. The young firm struggled on until the fall of 1859, when it was wound up, and the business was sold out to Messrs. Wright & French, formerly of Boston, Mass., who removed the retail part of the business to the northwest corner of Randolph and State Streets, and placed Mr. Sargent in charge of the same. Through his efforts it soon became one of the leading retail drug businesses not only of the city of Chicago, but of the Northwest.

In the summer of 1870, Mr. Sargent purchased the interest of his partners, and became the sole owner of a prosperous business of high reputation, which he had so successfully established; but he was not allowed to enjoy the fruits of his labors for any length of time, as the great fire of 1871 came upon him just when he felt that he was free from all financial entanglement, and the bright outlook was again darkened by the great calamity, which left him penniless. However, with that indomitable energy that characterized the people of the stricken city, Mr. Sargent began at once to re-establish himself in the retail drug business at the northwest corner of Wabash Avenue and Sixteenth Street, and very soon did a good business. Here he added physicians' supplies, including surgical instruments and appliances, and remained in this location until 1878, when he removed to 125 State Street, adding here chemists' and assayers' apparatus and supplies to his increasing business, which became so extensive that in 1892 he removed to larger quarters, at 106 and 108

Wabash Avenue. In January, 1903, having purchased the stock of chemicals and chemical apparatus of Messrs. Richards & Co., 108 Lake Street, which with his similar stock he removed to the present quarters, 143 and 145 Lake Street. The drug and physicians' supply department was removed to 30 East Washington Street.

The above recital of Mr. Sargent's business career indicates the success of a most upright, honest and conscientious pharmacist of the past century. Let us scan his life and work from the professional side. He was in the foremost rank of advanced pharmacy and medicine. We do not over-estimate by saying that he contributed more to the progress of these professions in Chicago and the Northwest than any other man of the period. He was one of the charter members of the College of Pharmacy, organized in 1859, and of which institution he was an officer and guiding spirit for nearly half a century. He became a member of the American Pharmaceutical Association in 1864, and was its president in 1869, one of the founders of the Illinois State Microscopical Society and the State Pharmaceutical Association, a director of the Chicago Botanical Garden, a member and officer of the Chicago Academy of Science, a trustee of the School of Pharmacy of the Northwestern University, a member of the committee of the World's Congress in 1893, the oldest living member at the time of his death of Oriental Lodge of Free Masons of Chicago, a member of the church of the New Jerusalem. He was honored by the University of Illinois in bestowing upon him the honored title of Master in Pharmacy, he was equally honored by honorary membership by the Massachusetts College of Pharmacy, New Hampshire Pharmaceutical Association, and many other societies.

He was married to Miss Mary Elmer, of Jeffersonville, Indiana, and had two children, a son and a daughter, the latter, Mrs. T. P. Smith, Jr., with the widow surviving him.

Mr. Sargent was present at the golden jubilee meeting of the American Pharmaceutical Association, held at Philadelphia, 1902, although he was not feeling well at the time. After the meeting he made a short visit to friends in Massachusetts, and on returning home took to bed and lingered along from a complication of diseases due to old age until the end came. The funeral services took place April 27th, at 2 o'clock at the residence, 4822 Kenwood Avenue, largely attended by old citizens of Chicago, members of

the Masonic and religious societies, the medical and pharmaceutical professions, and especially attended by the members of the Chicago Veteran Druggists' Association, of which he was an honored past-president. He was buried at Oakwood Cemetery. The pall-bearers were Prof. J. H. Long, Thomas N. Jamieson, W. Bodemann, Henry Biroth, Thomas H. Patterson and Judson S. Jacobus. It was in everybody's mind, "That a good man has passed away, and the world is better for it that he has lived."

Among those who had tutelage and training under Mr. Sargent, we recall, previous to the fire, Samuel H. Larmanie, Peter J. Singer, Albert E. Ebert, Thomas W. Baird, Louis Strehl, John Corbidge, N. Gray Bartlett, Thomas N. Jamieson, Judson S. Jacobus, Isaac H. Fry, Edwin R. Smith, Edward C. Jones, H. M. Palmer, George Ives, Fred M. Schmidt, Rollin A. Keyes.

FORMULAS FOR SOME GALENICAL PREPARATIONS OF THREE VEGETABLE DRUGS THAT MERIT FURTHER MEDICAL ATTENTION.[1]

By George M. Beringer.

Galega Officinalis Linné.—This perennial herbaceous leguminous plant is indigenous to Southern Europe, and is but slowly acquiring a reputation as a valuable galactagogue. It is now more than thirty years since Gillett-Damitte, in 1873, in a communication to the French Academy, reported that experiments demonstrated a real foundation in fact for the popular belief in the galactagogue value of this plant. Since then a number of other investigators have confirmed this conclusion. The generic name, "Galega," is derived from the Greek and signifies to lead or induce milk, showing that as long ago as the time when Linnæus wrote his "Species Plantarum" this property was attributed to this particular species.

The tops, including stems and leaves, are the parts used for stimulating lacteal secretion. To the root is ascribed diaphoretic, diuretic, antispasmodic and anthelmintic properties. The older writers recommended an infusion of the herb (10–200), given in tablespoonful doses every hour or an aqueous solid extract given in 5-gramme

[1] Read at the meeting of the New Jersey State Pharmaceutical Association at Bernardsville, May 25, 1904.

doses from four to eight times per day. Neither of these are inviting forms of administration, and to this fact may be attributed the lack of the extended use which the remedy seems to merit. The fluid extract and syrup are more modern and elegant preparations for the exhibition of this medicine, and the following formulas for these are submitted:

EXTRACTUM GALEGAE FLUIDUM.

Goats' Rue herb in No. 30 powder	1,000 grammes.
Diluted alcohol, sufficient quantity to make	1,000 c.c.

Moisten the powder with 500 c.c. of the menstruum and pack in a percolator; then add enough of the diluted alcohol to leave a layer above the drug, and when the percolate begins to drop, cork up the percolator and cover it, and allow the materials to macerate for two or three days. Then proceed to percolate until the drug is exhausted. Reserve the first 900 c.c. of the percolate and recover from the remainder the alcohol and evaporate to a soft extract; dissolve this in the reserved portion and make the finished product measure 1,000 c.c. by the addition of sufficient diluted alcohol:

SYRUPUS GALEGAE.

Fluid extract of Goats' Rue	15 c.c.
Syrup	105 c.c.
Oil of fennel seed	1 c.c.

Mix.

Hawthorn Berries—Cratægus Oxyacantha (Gärtner); Mespilus Cratægus (Linné).—The hawthorn, or white thorn, is another European plant that has long been used in household medication. The leaves, the bark of the twigs, the flowers and the fruit have all been so used.

The fruit is a drupe-like pome about four or five lines long, oval in outline, externally dull-red in color. It rarely contains more than one stony kernel, which is entirely imbedded.

The fruit is said to possess a decided action as a cardiac tonic. The fluid extract is the proper form for its exhibition, and the following is the formula adopted by the writer:

EXTRACTUM CRATÆGI FLUIDUM.

Hawthorn berries in No. 30 powder	1,000 grammes.
Glycerin	50 c.c.
Alcohol and water, of each a sufficient quantity to make	1,000 c.c.

Mix the glycerin with 600 c.c. alcohol and 250 c.c. water and moisten the drug with a portion of this mixture. Pack in a percolator and pour on enough of the menstruum to leave a layer of liquid above the drug, and, as soon as the percolate commences to drop, cork up the percolator, cover it and allow to macerate for two or three days. Continue the percolation, gradually adding the balance of the mixture, and continue with a menstruum of 2 volumes alcohol and 1 volume water until the drug is exhausted. Reserve the first 850 c.c. of the percolate, recover the alcohol from the remainder and concentrate to a soft extract. Dissolve this in the reserve and make up the volume to 1,000 c.c. with a mixture of alcohol 2 volumes and water 1 volume.

Lachnanthes—Wool Flower, Red Root.—The entire plant of Gyrotheca capitata (Walt.), Morong., Lachnanthes tinctoria, Ell. The subject of this note is an indigenous plant of the Atlantic seaboard of the United States, from Massachusetts to Florida. It is found growing on the borders of ditches in sandy swamps and the cranberry bogs of New Jersey appear to be favored spots for its habitation. I have found it growing as far from the coast as Atco and Berlin, in Camden County. The materials for the experiments of the writer were collected near Hammonton, in Atlantic County, where it is fairly abundant.

Lachnanthes is a perennial herb 1½ to 2½ feet high. The lower leaves are equitant; the upper or stem leaves are alternate, being gradually reduced in size until those at the top become mere bracts. The plant is largely propagated by stoloniferous rhizomes; the roots are fibrous and have a bright red color. The flowers are in dense terminal cymous panicles, are yellow and externally densely woolly. The capsule is three-valved, and each cell contains about six disk-like seeds. The seed-coat also contains a bright red coloring matter and an intensely bitter principle. When chewed the plant colors the saliva yellowish-red and leaves a decidedly acrid taste. This acridity is probably due to calcium oxalate, as numerous acicular crystals of this salt are shown on microscopic examination of sections. The acridity largely disappears on drying.

The coloring matter present in the roots and seeds attracted the attention of the early observers and writers, and J. Redoute ("Les Liliaceæ") wrote: "The roots and seeds yield to simple infusion a red color analogous to that obtained from garance (madder), but not so

solid or useful." Gronovius in his "Flora Virginia," 1772, states: "My inquiries lead me to think more favorably of this Heritiera as one of the plantæ tinctoria of the United States." Heritiera tinctoria was the name by which Gmelin had designated this plant.

Lachnanthes was used by the Indian tribes of the Southern States —especially the Seminoles of Florida. They called it "spirit weed," and used to chew the roots and tops with water. Millspaugh ("Medicinal Plants") says: "The root was esteemed as an invigorating tonic by the aborigines, by whom it was said to cause brilliancy and fearless expression of the eye and countenance, a boldness and fluency of speech and other symptoms of heroic bearing, with, of course, the natural opposite after-effects."

Porcher ("Resources of the Southern Fields and Forests") states that "the root is astringent and tonic," which is but a repetition of the statement in Griffith's "Medical Botany."

The Homeopaths have used the remedy and Lippe has tested it, and described the symptoms and therapeutic action. (Hale's "New Remedies" and Hugh's "Pharmaco-Dynamics.") Millspaugh (*loc. cit.*) says: "A tincture of the root has been recommended in typhus and typhoid fevers, pneumonia, various severe forms of brain disease, rheumatic wry-neck, and laryngeal cough!" After describing the physiological action of the remedy he observes: "The action of this drug appears as far as proven to be quite similar to that of pulsatilla."

Recently the drug has attracted some attention in England as a valuable remedy in the treatment of tuberculosis, and Dr. H. R. D. Spitta and Dr. A. Latham have published in the *Lancet* a note on their experiments on the chemical constituents and also physiological experiments on healthy as well as tuberculous animals. Guinea-pigs were killed by small doses of the extract, death being preceded by paralysis of the extremities. Their results seem to agree with the statement made by Homeopaths that the action of this drug is largely upon the cerebro-spinal system.

No complete chemical investigation of this plant has yet been published. The late Prof. Henry Trimble intended to make such an examination from materials supplied by the writer. His work on this subject was not published, and was probably not completed before his decease. If time will permit the writer will undertake this again when fresh material is obtained.

This plant should be collected for its drug value while in bloom, which occurs, according to locality, from June to September. August is the proper time for collection in New Jersey. The tincture of the fresh plant is believed to be the best form for its exhibition, and is prepared as follows:

TINCTURA LACHNANTHIS.

Take of the fresh plant freed from sand and dirt by washing in clear water . . . . . 1,000 grammes
Cut up and pound to a pulp, then add alcohol . . . . 1,000 c.c.

and set aside to macerate for seven days. Then express and wash the dregs with sufficient alcohol by soaking and expressing until 2,000 c.c. of tincture is obtained. Filter and preserve in well-corked vials. The dose of the tincture is from 10 to 30 minims.

PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF SOME OF THE LITERATURE RELATING TO PHARMACY.

By M. I. Wilbert,
Apothecary at the German Hospital, Philadelphia.

New pharmaceutical journals are usually considered as being among the more interesting novelties in pharmaceutical literature. This, to an extent at least, is due to the fact that they are almost invariably an indication of the needs and wants of an appreciably large class of pharmacists. This is particularly true where these new journals embody any new or novel features either in their contents or in their proposed aims. Among the pharmaceutical journals that have been but recently established is *The Journal of the Alumni of the Massachusetts College of Pharmacy.* This, as its rather lengthy name would indicate, is being published in the interest of the Massachusetts College of Pharmacy. The *Journal* appears to be intended as a quarterly of 48 pages, octavo, and is well printed on a good quality of paper. The material contained in the two numbers so far issued is well calculated to arouse the interest and the enthusiasm of the alumni of the college, and, if possible, to induce them to make additional and renewed efforts in advancing the interests of their alma mater.

Another comparatively new venture in the pharmaceutical journal line is the *Vierteljahresschrift für praktische Pharmacie*, published by

the German Apotheker-Verein, Berlin. This is also a quarterly and is intended, primarily, as a review of current pharmaceutical literature, particularly of such new remedies and novelties as are introduced from time to time.

Pharmacy and Chemistry are to be particularly well represented *at the St. Louis World's Fair.* Group 23 is entirely devoted to the chemical and pharmaceutical arts. According to the announcements already published, this group comprises laboratory supplies, chemicals, drugs, pharmaceutical preparations, artificial textiles, paints, pigments, dye stuffs, rubber goods and pyrotechnics.

In addition to this there will also be an interesting outdoor exhibit of growing medicinal plants, made by the Bureau of Plant Industry of the U. S. Department of Agriculture. This exhibit will be under the personal supervision of Dr. Rodney H. True, the Physiologist to the Department of Agriculture, and will comprise growing specimens of a very large number of medicinal plants. In addition to the plants actually under cultivation the Bureau of Plant Industry will also have an indoor exhibit in which different parts of plants, properly dried and prepared, will be shown.

Weeds Used in Medicine is the title of a "Farmers' Bulletin" recently issued for gratuitous distribution by the U. S. Department of Agriculture.

The object of this particular publication is to instruct farmers and others that may be interested how to gather and prepare a number of the more common weeds that are used as medicines.

The Bulletin contains 31 illustrations of the weeds described and may be had on application to the Secretary of Agriculture, Washington, D. C.

The History of the Paris School of Pharmacy has been prepared and is now in course of publication. It is being issued to commemorate the centennial celebration of the founding of the school and is to be quite an elaborate publication. It is to contain biographies of the several professors that have been connected with the school since 1803, also a history of the origin and progress of the school since its inception.

A History of the Massachusetts College of Pharmacy, by Wilbur L. Scoville, is to be found in the second number of the *Journal of the Association of the Alumni of the Massachusetts College of Pharmacy* (March, 1904, page 6). From this sketch it appears that the Massa-

chusetts College of Pharmacy is one of the oldest pharmaceutical associations in the United States, being organized in 1823, or about two years after the founding of the Philadelphia College of Pharmacy. As a teaching institution, however, or as an incorporated society it only dates to 1852, the regular courses of lectures were not commenced until 1866, while the date of the first graduation is given as 1869.

The Affiliation of the College of Pharmacy of the City of New York with Columbia University (A. J. P., 1904, page 191), has been most liberally commented on in a number of pharmaceutical as well as medical journals. With but few exceptions, the consensus of opinion appears to be that it has been a step in the right direction and that it bodes well to place pharmacy in this country on a much higher plane than that occupied by it at the present time. That this particular move was quite in keeping with the spirit of the times is evident from the proposed scheme to merge the Massachusetts Institute of Technology with Harvard University, with a view of increasing the efficiency of the two institutions.

This evident tendency to bring technical teaching more closely in contact with, or to make it a part of the curriculum in the larger universities, will and must increase the demands made on the various schools for a more thorough education and training, and this in turn will of itself insure a marked improvement in the social condition of the persons engaged in these particular lines.

The Physiological Standardization of Drugs, particularly of digitalis, has been criticised by several German investigators recently. Among others C. Focke, of Düsseldorf (*Arch. d. Phar.*, 1904, page 699), asserts that frogs caught at different seasons of the year will give variable results. To get correlating or absolutely reliable results it would be necessary to confine experiments to the summer season, as it has been found that frogs caught at this time of the year show the least variability.

Adulterated Powdered Gentian.—H. S. Collins (*Chem. and Drug.*, 1904, page 404) reports meeting with several samples of powdered gentian which he found to be grossly adulterated. The general appearance, aroma and residual ash gave no ground for suspicion. In three samples examined the adulterant was powdered almond shells, and in two others pine wood and woody tissue, in addition to the almond shells. In this connection Collins calls attention to the

fact that too much reliance should not be placed on the physical appearance or on the residual ash, and suggests that the microscope offers the most reliable means for determining the genuineness or otherwise of powdered drugs.

False Ipecacuanha.—W. Brandt (*Apothek. Zeitg.*, 1904, page 102) describes several roots that have been offered in Germany in place of true ipecac. The roots are said to be quite distinctive and not readily to be mistaken for Rio ipecac. The starch grains are comparatively large, and in many of the cells raphides of calcium oxalate are not only more numerous, but the needle-like crystals appear to be larger than in true ipecac.

A False Scammony Root.—Harold Dean (*Phar. Jour.*, 1904, page 327) says that the root of *Ipomoea Orizabensis* (Ledan), also known as "woody jalap" or "male jalap," has recently appeared on the market in considerable quantities. It is said to yield from 12 to 18 per cent. of a resin closely resembling, if not identical with, the resin of scammony.

This root is supposed to be the source of much of the "commercial scammony resin" that is being sold in England at the present time. As true scammony root only yields from 5 to 6 per cent. of resin, the preference of manufacturers for the root of *Ipomoea Orizabensis* is readily explained.

Spurious Virginia Prune Bark.—At a recent meeting of the Pharmaceutical Society, London (*Phar. Jour.*, 1904, page 360), Horace Finnemore, pharmacist to Guy's Hospital, London, called attention to a sample of wild cherry bark that had come to the pharmacy of the hospital in the ordinary course of business, which when moistened with water did not develop the odor of benzaldehyde.

Examination under the microscope showed it to be devoid of the characteristic stone cells found in *Prunus Serotina*, but to have numerous crystals of calcium oxalate, in stellate masses, and sclerenchymatous fibres.

These fibres appear to be characteristic of the bark. Mr. Finnemore, while not able to definitely decide on the botanical origin of the spurious bark, suggests that it has many points in common with that obtained from *Prunus Avium*.

The present status of our knowledge of strophanthus seeds was carefully reviewed by several writers in a recent number of the "Berichte der Deutschen Pharmaceutischen Gesellschaft." E.

Gillig believes that the most desirable seed available at the present time is that of *Strophanthus Gratus* (Wal. and Hook.). *Strophanthus Gratus* contains a glucoside that is readily crystallized. This has been designated *gratus strophanthin* by Thoms, who believes it to have high therapeutic value. It has the following chemical composition: $C_{30}H_4O_{12}\ 9H_{20}$. *Gratus strophanthin* is soluble in 100 parts of water at ordinary temperatures, more readily soluble in alcohol and amyl-alcohol; it is but slightly soluble in ether, chloroform and acetic ether.

Mydriatic Alkaloid in Lactuca Virosa.—Messrs. E. H. Farr and R. Wright at a recent meeting of the Pharmaceutical Society of Great Britain contributed an account of a careful investigation into the controversy on the existence of a mydriatic alkaloid in *Lactuca Virosa.* The results of a careful investigation appear to confirm Dymond's assertions that *Lactuca Virosa* contains a mydriatic alkaloid in demonstrable quantities. (See A. J. P., 1892, page 46)

The Distribution of Alkaloids in Conium Maculatum, was the subject of another very interesting paper, presented by Messrs. Farr and Wright, at a recent meeting of the Pharmaceutical Society. (*Chem. and Drug.*, 1904, page 266.)

They demonstrate that the development of the alkaloid is closely associated with the development of the fruit.

The amount of alkaloid found varied from 0·031 per cent. in the leaves of young plants to 0·975 per cent. in the green fruit of plants having reached their full growth.

The results obtained by the writers of this paper would appear to favor the continued use of conium seed in preference to any other portion of the plant.

Fetron.—This is the name given by the manufacturers to a new ointment base that is said to combine many of the qualities of lanolin and vaseline, facilitating absorption while at the same time providing an efficient protective covering.

Fetron is a solution of stearic acid anilide in vaseline. The former, a white crystalline substance, melting at 93° C., and formed by heating anilide with stearic acid. Stearic anilide offers great resistance to chemical reagents, being unaffected by boiling with caustic alkalies, and passing through the human system unchanged. It may be mixed with a great diversity of medicaments without influencing their action or exerting any of its own and does not become rancid or decompose on exposure.

Stearic anilide is soluble in ether, alcohol, chloroform, benzine, benzol and carbon disulphide. (*Apothek. Zeitg.*, 1904, page 234.)

A Differential Test for Phenacetin and Acetanilid is given by Et. Barral (*Jour. de Phar. et de Chemie*, 1904, page 237), as follows:

A solution of phosphomolybdic acid added to an aqueous solution of acetanilid gives a yellow precipitate, which does not dissolve on heating. The same reagent added to a solution of acetanilid gives a bright yellow precipitate, which is readily dissolved again on heating.

Mandelin's reagent—ammonium vanadate, 1; sulphuric acid, 200—produces a bright red color in a solution of acetanilid that is rapidly changed to a greenish brown. In a solution of phenacetin the same reagent produces an olive-green color that on heating is changed to brown and ultimately black.

The Inclusion and Occlusion of Solvent in Crystals has been investigated by Theodore William Richards (*Proc. Am. Phil. Soc.*, 1903, page 28), who advances this as one of the most frequent as well as one of the most insidious sources of error in quantitative chemical investigations.

Mr. Richards recounts several experiments that would appear to indicate the prevalence and magnitude of the possible inaccuracy from the unexpected included mother liquor and also demonstrate the difficulty of eliminating the mother liquor by ordinary means. This occluded solvent is distinct from the water of crystallization and is even more difficult to eliminate than the latter.

It is for this reason that Mr. Richards believes it to be practically impossible to determine with the exactness demanded in the most accurate work, the true weight of any salt containing water of crystallization.

The N-rays discovered by a French physicist, M. Blondlot, nearly a year ago, have been attracting considerable attention during the past few months. This is largely due to the work that has been done in France by Charpentier, Blondlot and others.

N-rays appear to be a form of radiation quite distinct from the Roentgen, or X-rays; they do not affect photographic plates directly, but do have the property of increasing the luminosity of phosphorescent bodies, like sulphid of calcium.

The sources of N-rays are numerous and new ones are constantly being discovered. It has been found that they are emitted by a

number of sources of artificial light, also by a vacuum or X-ray tube in action.

Charpentier has demonstrated that the human body is a constant and varying source of N-rays, depending apparently on the activity of the tissues composing the particular part under observation.

The Constitution of Epinephrin.—According to Dr. H. A. D. Jowett, it is now generally considered that the Epinephrin of Abel, Suprarenin of Fürth and the Adrenalin of Takamine are in reality more or less pure forms of the same constituent; a catechol derivative with possibly a hydrogenized pyrrhol nucleus.

His investigations of this material have led him to agree with Aldrich that it has the composition $C_9H_{13}N.O_3$. (*Chem. and Drug.*, 1904, page 276.)

A Danger of Adrenalin.—Neugebauer (*Am. Med.*, 1904, page 762, from *Centbl. f. Phar.*) reports that he has seen several cases of localized gangrene following the use of solutions to which adrenalin had been added, for the infiltration-method of local anæsthesia.

Elderly persons were especially liable to this, and he therefore cautions against the use of adrenalin in old people.

Bactericidal Powers of Alcohols.—G. Wirgin (*Zeit. f. Hyg.*, 1904, page 149, through *Brit. and Col. Drug.*, 1904, page 351), from a large number of experiments that he has made, concludes that the disinfecting power of an alcohol rises with its molecular weight. Tertiary alcohols, however, are weaker than primary or secondary alcohols of the same series. The strength of an aqueous solution which acts most powerfully is, for methyl alcohol, 60 to 70 per cent.; ethyl alcohol, 60 per cent.; propyl alcohol 30 per cent., and for the higher alcohols the saturated solutions.

Upon dry germs absolute alcohols are practically without action, and the same is true of the higher concentrations of water soluble alcohols.

Alcohol from Fæces.—The wide publication that was given to the proposition that it was possible to obtain alcohol from the destructive distillation of fæcal matter has apparently led to a more or less widespread misconception of the commercial practicability of the scheme. While it has been asserted that as much as 7 or even 9 per cent. of alcohol has been obtained from fæcal matter, these statements have so far at least not been duplicated by repu-

table chemists. The best that has been done to the present time is not more than one-tenth the amount claimed by the original projectors. (*Phar. Jour.*, 1904, page 466.)

The Production of Oil of Rose in Bulgaria.—An interesting article on the rose-oil industry in Bulgaria has recently been published in the *Pharmaceutische Post*, Vienna (1904, page 77).

The oil of rose of the ancients, referred to by Dioscorides in his Materia Medica, was produced by macerating rose leaves in olive oil. In this shape the perfumers used it for many centuries. The distillation of rose leaves was probably first introduced about the eighth century, and it was not until the end of the sixteenth century that the minute oil globules that occasionally appeared on the surface of rose water were collected and used.

In Bulgaria the centre of the rose industry is found in Kazanlik, Nova-Zagora and Tchirpan. This region is about 400 meters above the sea level, and has a range of temperature of 55 to 60 degrees centigrade. By far the greater number of Bulgarian distillers use *Rosa Damascena* Miller, beginning to gather the flowers about the middle of May and continuing for about one month.

It requires 3,000 kilograms of rose petals to produce one kilo of the oil. The crop in 1903, the largest for thirty years, was 6,260 kilograms, in place of 3,900 kilograms in 1902, and 3,200 kilograms in 1901.

Formation of Terpene compounds in chlorophyl containing organs.—E. Charabot and A. Hebert have found that the systematic and complete removal of the inflorescences from growing peppermint plants brings about a marked increase of the stem and green parts, and a corresponding increase in the percentage yield and absolute weight of oil obtained on distillation.

Light has a marked influence on the secretion of essential oil, more being formed in those parts freely exposed to its influences than in those which are shaded. (*Phar. Jour.*, 1904, page 466, from *Compt. Rend.*)

Oil of Cassia.—Schimmel & Co., in their Bericht for April, 1904, state that they have on several occasions recently observed that samples of oil of cassia sent them for examination had been adulterated with colophony (rosin).

The adulterated oils leave a greater residue on distillation, and also give a decided precipitate when treated with a saturated alcoholic solution of acetate of lead.

Anethol.—According to the recent Bericht of Schimmel & Co., the use of anethol is rapidly displacing that of oil of anise. This is, of course, due to the fact that the slight difference in price is more than compensated for by the 10 per cent. of other and usually useless constituents that are present in commercial oil of anise in addition to the anethol.

SOME RECENT LITERATURE.

AN ATTEMPT AT A CHEMICAL CONCEPTION OF THE UNIVERSAL ETHER.

D. J. Mendeléeff, the celebrated author of the "Periodic System of the Elements," has published some speculations in regard to the ether.

From a realistic standpoint it is inevitable that weight and chemical individuality should be ascribed to the ether. It must be a distinct chemical substance so light that it can escape the attraction of the fixed stars by the swiftness of the motion of its molecules; it can have no chemical affinity; its power of diffusion must be so great that it can penetrate all bodies, and thus elude being weighed, although it actually possesses a very minute weight. It can be assumed to be an inactive gas of the argon-helium series with very small atomic weight. By means of *inter*polation the author has predicted new elements (scandium, gallium, and germanium), and he ventures to make *extra*polations below helium. In the place before hydrogen he assumes the existence of an inactive element, which possibly is identical with *coronium*, with an atomic weight estimated at about 0·4. The ether must have a still smaller atomic weight, the value of which, $< 0{\cdot}17$, on account of the double extrapolation, is very uncertain. For the ether as an element the author proposes preliminarily the name *Newtonium*. He calculates also, that, in order that it might escape from the largest bodies of the universe, the atomic weight of the ether might necessarily be as small as one-millionth of that of hydrogen.

The author gives, in addition, a realistic explanation of radio-activity by supposing that the radio-active elements (U, Th, Ra), on account of their abnormally high atomic weights, are capable of holding a relatively large number of the ether atoms about their large centres of mass, without combining with them chemically, and that the arrival and departure of the ether molecules is accompanied

by disturbances in the ethereal medium which produce the rays of light.—From an abstract in *Chem. Centralblatt* (1904, i, 137), through *Am. Jour. Sci.*, March, 1904, page 243.

A NEW METRIC MEDICINE GLASS.

After considerable discussion as to the feasibility of making a moulded, conical glass that would be sufficiently inexpensive to be used as a medicine glass, and after submitting several models and offering a number of suggestions, M. I. Wilbert (*Amer. Med.*, May 7, 1904, p. 735) was finally successful in inducing one of the large manufacturers of hollow ware to undertake and make for him a moulded glass that would conform to his ideas and requirements.

The resulting medicine measure, a picture of which is appended, is of inverted cone-shape, with a heavy base or foot. It is 75 mm. high, over all, and has an inner diameter of 50 mm. at the lip, while at the base the inner diameter is but 10 mm. At the 1-teaspoonful mark, which is 25 mm. above the bottom, the inner diameter of the glass is about 20 mm., while at the 2-teaspoonful mark, 35 mm. above the bottom, the diameter is but little more than 27 mm.

Specimens of this medicine glass shown at the meeting of the American Pharmaceutical Association at Mackinac Island (August, 1903) were favorably commented on by a number of the members.

As will be noted, this glass conforms to one of the most reasonable requirements for measures of capacity, and one that should be insisted on for all measures intended for liquids, namely, that the height of the contained liquid at any given graduation, should be greater than its diameter.

METRIC MEDICINE GLASS.

The evident advantages possessed by a graduated conical glass, to measure differing quantities of liquid, are so apparent that it is surprising indeed that this particular shape has not been suggested or used before as a popular dose measure.

In actual practice these glasses have proved to be even more satisfactory than was at first expected. In addition to being infinitely more accurate as dose measures, particularly for the 1- and 2-teaspoonful quantities, they also facilitate the administration of doses of liquid medicines. This

latter is due to the fact that the short sloping sides of the glass make it possible to bring the edge of the glass to the lips of the patient without slopping or spilling any of the contained liquid, while the comparatively wide mouth of the glass facilitates drinking from it. In addition to this the glass has no sharp corners and is therefore very readily cleaned and easily kept clean.

The most surprising advantage, however, is the durability that the glass has been demonstrated to possess. This particular shape has been in use at the German Hospital, Philadelphia, for nearly a year, and during that time, despite the fact that there has been a decided increase in the number of patients treated, they have broken less than one-half the number of medicine glasses that were used for a similar period of the previous year. This is all the more surprising as it had been argued that a glass having a foot like a goblet, would necessarily be more fragile than one having straight sides.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

PHARMACEUTICAL FORMULAS, being a supplementary volume comprising a consolidation of the Medicine-stamp Acts (with historical notes); formulas for known, admitted, and approved remedies; an Australian Hospitals Formulary; and many other recipes. Published at the offices of *The Chemist and Druggist*, 142 Cannon Street, London, E. C. Branch offices: Adelaide, Melbourne and Sydney, Australia. 1904.

In an editorial note it is stated that "the publication of this supplementary volume of 'Pharmaceutical Formulas' is necessitated by changes in the administration of the Medicine-stamp Acts, consequent upon judicial decisions whereby medicines which are sold under names referring to ailments of the human body become dutiable on and after March 31, 1904; but if such medicines are sold by registered chemists as 'known, admitted and approved' remedies they are exempt from stamp duty." The Board of Inland Revenues has wisely exempted the formulas published in the British Pharmacopœia and other well known books of reference. The subscribers of the *The Chemist and Druggist* were invited to contribute their formulæ for publication in the present volume and all those received up to the end of 1903 are included.

"Each important chapter is prefaced by remarks which indicate

the nature of the contents, especially in respect to liability to duty or otherwise. As the primary object of the volume is legal rather than pharmaceutical, there is more variety in the formulas than the writer of a book of formulas would ever dream of presenting, but the collection has the great merit of representing the actual working formulas of those who have been selling the preparations."

The book contains chapters on the following subjects: The medicine-stamp Acts; Australian formulas; preparations with ailment names (abscess-croup); preparations for coughs, indigestion, neuralgia, toothache; preparations with body-names, with descriptive titles; galenical preparations; miscellaneous preparations; preparations chiefly for the toilet; unclassified formulas; etc. A good index completes the volume. The book is very interesting in presenting, as has already been stated, actual working formulas. Care must be exercised in the practical use of the book, as some of the formulæ can be improved. The book is also valuable from a historical point of view, containing, as it does, without any editing the formulæ sent in by the subscribers of *The Chemist and Druggist.*

UNIVERSITE DE PARIS. ECOLE SUPERIEURE DE PHARMACIE. Theses for obtaining the degree of Doctor of Pharmacy of the University of Paris during 1903–1904:

"Histologie Comparée des Gelsémiées et Spigéliées," by Edmond Morelle. An illustrated monograph on the comparative histology of gelsemium and spigelia and other members of the Loganiaceæ.

"Contribution a l'Etude de la Présure chez les Végétaux," by Maurice Javillier. A thesis on the rennet-like ferments found in plants.

"Action de l'Eau sur la Sécrétion Urinaire," by Henri-Joseph Bretet. A thesis on the influence of water on the character of the urine.

"Dosage de l'Azote Nitrique," by Leon Debourdeaux. The author gives, as a result of his work on the determination of nitric acid, a modification of the method of Pelouze-Fresenius.

"Des Bactéries Denitrifiantes," by Augustin-François-Alexis Boutron. A monograph in the denitrifying bacteria, giving morphological data, character of cultures and biochemical character.

"Contribution à l'Etude des Fluorures," by Paul-Edouard Defacqz. A study of the fluo-chlorides, fluo-bromides and fluo-iodides of the alkaline earth metals.

"Essais sur les Chromites de la Série Magnesienne," by Abel-Auguste-Marie Esnault. An essay on the chromites of magnesium, manganese, iron, metal and cobalt. H. K.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION at the fifty-first annual meeting held at Mackinac Island, Mich., August, 1903. Also the constitution, by-laws and roll of members. Baltimore, 1903.

This, the fifty-first annual volume of the proceedings of the American Pharmaceutical Association, has finally been distributed to the members. It contains as a frontispiece a very creditable half-tone portrait of the late George Washington Kennedy, who for many years was the secretary of the Council of the American Pharmaceutical Association, and was also the secretary of the committee of the Council on membership.

While this volume does not differ materially in style and general make-up from any of the volumes that have preceded it for a decade or more, it nevertheless fully maintains the standard that has been established by these annual volumes for the variety and interesting nature of their contents.

This particular volume, like those immediately preceding, is rather a ponderous one, containing, as it does, upward of 1,100 pages of printed matter. Of these, 567 pages are devoted to the minutes of the proceedings at the Mackinac meeting, and 423 pages are taken up by the report on the progress of pharmacy. The whole volume is covered by an index that takes up 17 double-column pages, comprising upwards of 1,250 references.

Altogether it may be said that this latest volume of the proceedings constitutes an almost inexhaustible mine of pharmaceutical information, and that it is practically indispensable to the pharmacist that wishes to keep well informed, or to remain in touch with the progress that is being made in his particular line.

Despite the many excellent features that are embodied by these annual volumes, there are several rather serious objections that can be made to the book as published at the present time. The first of these is the unnecessary and unusually undue delay in publication. This is a fault that has been called attention to repeatedly, and is one that should be remedied, if the proceedings are to be of the greatest possible interest and value to the members of the Association.

The second objection that might rightfully be advanced is the very conservative use of the editorial blue pencil.

The volume before us contains page after page of matter that could very well have been omitted, as it does not furnish interesting reading, nor does it add in any way to the value of the remaining material. In this connection a very large amount of the, at times, verbose discussions might very well have been omitted entirely, or, if included, instead of being given verbatim and in detail, would be of much greater interest, and more likely to be considered, if given in abstract.

The third objection, and again a serious one, in connection with a volume that is intended to be used as a reference book, is the sparseness of the index, although here there appears to be a decided improvement over the index in the volume immediately preceding.

These several shortcomings are, of course, inherent, and can only be remedied if the several members of the Association, recognizing that they exist, demand the necessary changes.

Apart from these and similar shortcomings, that are really mere secondary and detail matters of opinion, the volume now before us is one that should be found in every up-to-date pharmacy, and is, taken all in all, the strongest argument that could possibly be offered for a pharmacist to seek membership in the American Pharmaceutical Association.

M. I. W.

OBITUARIES.

Dr. Alois Philipp Hellman, the founder of the *Pharmaceutische Post*, Vienna; also one of the founders of the Austrian Pharmaceutical Association, died May 29, 1903, in his sixty-third year.

August Garcke, the oldest, and probably the best-known, German botanist; Professor of Botany at the University of Berlin, died January 10, 1904, in his eighty-fifth year.

Professor Garcke was born October 25, 1819; his "Flora of Germany" is a well-known and frequently-quoted handbook.

M. I. W.

PHARMACEUTICAL MEETING.

The last of the present series of pharmaceutical meetings of the Philadelphia College of Pharmacy was held on Tuesday afternoon, May 17th, Mr. Walter A. Rumsey, a member of the Board of Trustees, presiding.

Mr. Eugene Ross, traveling representative of the manufacturing firm of Johnson & Johnson, New Brunswick, N. J., was the first speaker introduced and gave a most interesting address, entitled "A Pharmacist's Impression of the Orient," which will be published in a later issue of this JOURNAL, and exhibited in this connection some very valuable and interesting Japanese and Chinese souvenirs. Mr. Ross said that in Japan physicians dispense their own medicines and that there are no pharmacies proper. There are, however, numerous places for the sale of patent medicines, but nothing containing poisons is allowed to be sold by their proprietors. Chemists occupy a more responsible position, being licensed by the Government to examine all chemicals and medicines brought into the country, and to receive the revenue therefrom. In addition wholesale druggists in Japan must submit samples of their products to the Government for analysis, after which the chemists' stamps are placed upon the articles examined. If, however, the chemicals or medicines should not be found to be up to the standard, the chemist is fined from 1 to 10 yen ($1 to $10) for his failure to report correctly on the samples submitted. Thus, as a matter of fact, very pure chemicals are sold in Japan.

Mr. Ross further said that pharmacy in Japan dates back nineteen years, when the first Japanese Pharmacopœia was published. This work was modelled after the German Pharmacopœia. In addition all chemicals used to be obtained from Germany. The German influence is still strong, but the Japanese Government is becoming more liberal, and they are now looking to America and other countries for example. Some of their methods are so arbitrary, however, that it is predicted that in five years there will not be a foreign chemist in the country.

With regard to China, Mr. Ross said that it was very difficult to learn much about either pharmacy or medicine there. The medicines are mostly put up in wax and bear a seal upon the outside, which latter custom seems to prevail everywhere in the East. As is well known ginseng is largely used and is said to be in almost every preparation used.

Mr. Ross also visited the English colonies in South Africa, and said that there is a very great difference between Japan and these countries in pharmaceutical practice. The stores are very modern and carry a large stock; the physicians write prescriptions and these are put up by pharmacists or chemists who are well educated.

In the discussion of his address Mr. Ross said, in reply to a question by Professor Sadtler, that the metric system is used abroad altogether, and that the goods made by his firm for the Eastern market are put up in metric quantities.

Commenting upon trade conditions in the East, Mr. Ross said that he had visited the countries all the way from South Africa to Japan, and had found American goods to be the best in the Eastern market and everywhere in demand. In addition he said that our trade with the Orient had quadrpuled within the last fouryears.

Prof. Joseph P. Remington, Chairman of the U.S.P. Revision Committee, read a paper giving some of the salient features of "The Forthcoming Pharmacopœia" (see page 253). It was stated that the work is now being printed, and that it will in all probability be ready in October. Professor Remington also said that for the first time in the history of pharmacopœial revision in the United States the work is being revised under the control of a chartered organization. Probably one of the most conspicuous changes in the new book will be the introduction of doses.

Replying to a question by Dr. Lowe, Professor Remington said that the 1890 U.S. Pharmacopœia went into effect ninety days after it was issued, and that the new edition would probably be made effective in January, 1905. He said that it was important to have the date when the edition becomes authoritative stated on the title page.

Mr. Samuel R. Kennedy, a condensed-milk manufactuturer of Philadelphia, read a paper on the "Condensed Milks of Commerce," in which he showed that the quality of condensed milk depends very largely on the quality of the cow's milk used in its manufacture, and said that in order to secure milk of the proper quality the condensed-milk manufacturers make contracts with dairymen stipulating the care which they shall exercise, not only with regard to cleanliness, but also as to the kind of food which they shall give the cows. Speaking of the uses of condensed milk, Mr. Kennedy said that it forms a body for many food-products, it being a constituent of nearly all kinds of candy. Owing to the perishable nature of cow's milk, nearly all restaurants use condensed milk, which is diluted with fresh milk. Another advantage which this milk has is its property of curing bad coffee, or coffee that has stood for some time.

In reply to a question by Mr. Joseph W. England as to the use of preservatives in evaporated cream, Mr. Kennedy stated that in the case of plain heavy condensed milk the cane sugar which is added owes its antiseptic properties in all probability to the bisulphite of calcium which it contains, and that in evaporated cream nothing was added. He further stated that albumen was coagulated at 157° and casein at 180°.

Melvin W. Bamford, P.D., read a paper on the "Nomenclature of the Glycerophosphate Preparations," and offered a resolution recommending that an effort be made to secure greater uniformity in the strength and nomenclature of these preparations. (See page 277.) The resolution was seconded by Professor Kraemer, who suggested that copies of the same be sent to the Committee on National Formulary, to the Committee of Revision of the U. S. Pharmacopœia, and to the American Medical Association, after which it was adopted by the members present.

"A Quarterly Report on Progress in Pharmacy," by M. I. Wilbert, Ph.M., was read by title owing to the lateness of the hour. (See page 286.)

Professor Kraemer called attention to some authentic specimens of Pilocarpus leaves sent by Dr. Frederick B. Power, Director of the Wellcome Chemical Research Laboratories, London, as follows: *Pilocarpus Jaborandi* Holmes (Jaborandi Folia, B. P.); *P. microphyllus* Stapf (Maranham Jaborandi); *P. racemosus* Vahl (Guadaloupe Jaborandi); *P. pennatifolius* Lem. (Paraguay Jaborandi); *P. spicatus* A. St. Hil. (?) (Aracati Jaborandi); and also False Maranham Jaborandi (? *Swartzia decipiens* Holmes) and *Piper Jaborandi* Vell.

Attention was also directed to a number of specimens of vegetable origin collected by Jacob S. Beetem in Jamaica. They were as follows: Cacao pods, coffee berries, bay leaves, Ceylon cinnamon leaves, gamboge, lace bark, fruit of *Mucuna pruriens* (cowhage), seeds of *Abrus precatorius*, and some seeds and fruit known to the natives as "stinking foe," "Job's tears," "soap berries," "John crows," "woman's tongue," and "baby's tongue."

On motion of Joseph W. England a vote of thanks was tendered those who contributed to the interest and value of the meeting.

HENRY KRAEMER, *Secretary.*

Yours Respectfully
G. D. Rosenzweig